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APPLICATION AS PUBLISHED OR REPUBLISHED

To:

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IRLANDEDate of mailing (day/month/year)
25 November 2004 (25.11.2004)Applicant's or agent's file reference
P65282PC00

IMPORTANT NOTICE

International application No.
PCT/IE2004/000069International filing date (day/month/year)
13 May 2004 (13.05.2004)Priority date (day/month/year)
15 May 2003 (15.05.2003)

Applicant

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The International Bureau transmits herewith the following documents:

copy of the international application as published by the International Bureau on 25 November 2004 (25.11.2004) under
No. WO 2004/101398copy of international application as republished by the International Bureau on under
No. WOFor an explanation as to the reason for this republication of the international application, reference is made to INID codes (15), (48)
or (88) (as the case may be) on the front page of the attached document.The International Bureau of WIPO
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Facsimile No.+41 22 740 14 35

Facsimile No.+41 22 338 87 20

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
25 November 2004 (25.11.2004)

PCT

(10) International Publication Number
WO 2004/101398 A1

(51) International Patent Classification?: **B65F 1/14,**
B30B 9/30

(21) International Application Number:
PCT/IE2004/000069

(22) International Filing Date: **13 May 2004 (13.05.2004)**

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:
S2003/0369 15 May 2003 (15.05.2003) IE

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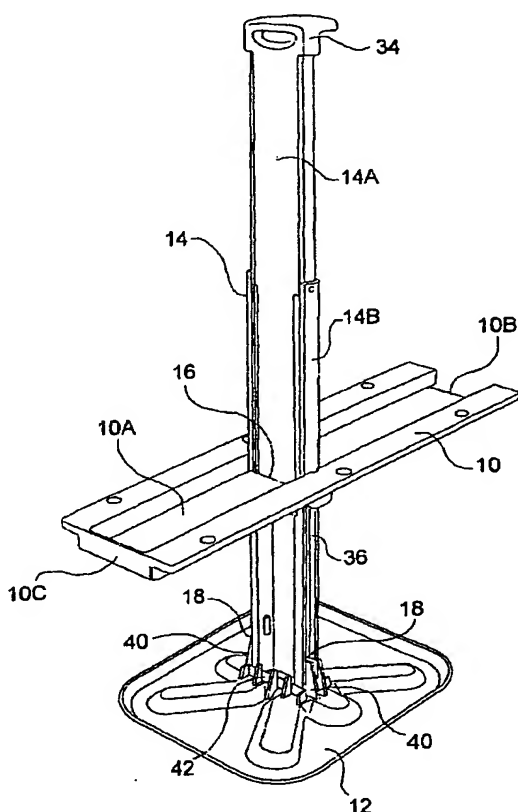
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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: **A COMPACTING MECHANISM FOR A REFUSE CONTAINER**



(57) Abstract: A compacting mechanism for fitting a surface over a refuse container comprising a support member (10) for fitting to the surface, the support member having an aperture (16) which in use is in register with an aperture in the surface. A compacting plate (12) is mounted under the support member, and is coupled to an actuator rod (14) through the aperture in the support member such that the rod may be manoeuvred from a storage position wherein the rod lies along the support member across the surface and the plate is drawn up under the surface to an operative position wherein the rod stands upright over the aperture in the support and may be pushed downwardly through the registering apertures to push the plate down into the container.

WO 2004/101398 A1



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Declarations under Rule 4.17:

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- of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A Compacting Mechanism For A Refuse Container

This invention relates to a compacting mechanism for a refuse container.

5

Our prior published Patent Specification WO 01/46042 describes a lid for a refuse container, the lid containing an integral compacting mechanism.

10 It is an object of the invention to provide a compacting mechanism which can be retro-fitted or fitted as original equipment to the top surface of a refuse container or any surface above a bin fitted or placed below that surface, e.g. kitchen counter,
15 kitchen cabinet, shelf, mobile service trolley or bin for garden or industrial compactable waste. Such a surface may be, but is not limited to, the non-opening roof of the type of refuse container used in "fast-food" establishments, which have a side opening for the
20 insertion of refuse, or other containers used in restaurants, hospitals, domestic or industrial kitchens or airline style service trolleys with a removable inside bin fitted with a plastic removable refuse sack. However, the invention is not limited to retro-fitting,
25 and it may be fitted to new installations.

According to the present invention there is provided a compacting mechanism for fitting to a surface over a refuse container, the compacting mechanism comprising a
30 support member for fitting to the said surface, the support member having an aperture which in use is in register with an aperture in the said surface, a

compacting plate mounted under the support member, an actuating rod, and means coupling the compacting plate to the actuating rod such that the rod may be manoeuvred from a storage position wherein the rod lies
5 along the support member across the said surface and the plate is drawn up under the said surface to an operative position wherein the rod stands upright over the aperture in the support member and may be pushed downwardly through the registering apertures to push
10 the plate down into the container.

An embodiment of the inventions will now be described, by way of example, with reference to the accompanying drawings, in which:

15 Fig. 1 is a perspective view of an embodiment of compacting mechanism according to the invention in its operative position, although omitting the refuse container to which it is fitted in use.

20 Figs. 2(a) and 2(b) are top perspective views respectively of the telescopic actuating rod of Fig. 1 in its fully retracted and fully extended states.

25 Fig. 3 are perspective views from below of the two components making up the telescopic actuating rod.

Fig. 4 are perspective views from above of the two components making up the telescopic actuating rod.

30

Fig. 5 to 7 show successive stages in the storage of the mechanism from the operative position shown in Fig. 1.

5 Fig. 8 shows the compacting mechanism fitted to a refuse container, the mechanism being in its storage position.

10 Fig. 9 shows the compacting mechanism fitted to a refuse container and deployed in its operative position.

Referring to the drawings, the basic elements of the compacting mechanism are a channel-shaped support member 10 for fitting to a non-opening roof of a refuse container having a side opening for the insertion of refuse, a compacting plate 12, an actuating rod 14 passing through an aperture 16 in the support member 10 and inwardly directed projections 18 on the plate
15 slidably coupling the plate 12 to the rod 14 in a manner to be described.

The actuating rod 14 is adjustable in length, being formed in two parts, Figs. 2 to 4, an inner part 14A which is telescoped within an outer part 14B formed as a shallow channel. In particular, the inner part 14A has a relatively narrow rear portion 14A' (Fig. 4) with grooves 20 along opposite edges which are slidably engaged by fixed projections 22 on the inside walls of the rear of the outer part 14B. The inner part 14A
25 also has a relatively wider front portion 14A'' having shallow recesses 24 along opposite edges which slide

under overhanging ledges 26 along opposite edges of the front of the outer part 14B. In this way the inner part 14A is guided for sliding movement into and out of the outer part 14B.

5

At the junction of its narrower and wider portions the inner part 14A has two laterally outwardly biased ball members 28 which resiliently engage a first pair of holes 30 in the opposite sides of the part 14B when the
10 part 14A is fully retracted into the part 14B and which resiliently engage a second pair of holes 32 in the opposite sides of the part 14B when the part 14A is fully extended out of the part 14B. Thus the inner part 14A is resiliently retained at each of its fully
15 retracted and fully extended positions. The inner part 14A has a handgrip 34 at its free end by which it may be drawn out of and pushed into the part 14B.

The channel-like outer part 14B of the actuating rod 14
20 has a groove 36 extending along each external edge about halfway along the part 14B from its closed end 38. Each groove 36 is slidably engaged by a respective inwardly directed projection 18 on the plate 12. In the operative position of the mechanism, Fig. 1, the
25 actuating rod 14 is orientated upright and extends through the aperture 16 in the support member 10 so that the projections 18 are at the closed ends 36A, Fig. 2(a), of the grooves 36. The projections 18 are formed at the top ends of respective arms 40 which
30 extend upwardly from a bracket 42 moulded or otherwise attached to the plate 12. The length of the arms 40 is such that, assuming no upward force is applied to the

plate 12, the closed end 38 of the actuating rod 14 is clear of the bracket 40. In this situation the plate 12 hangs freely from the end 38 of the rod 14 and is capable of rotation about the axis of the projections 18 which rest on the closed ends 36A of the grooves 36.

In use, as will be described, the support member 10 is fitted to a non-opening roof of a refuse container with the aperture 16 in register with a like aperture in the container roof, so that the actuating rod 14 passes through both the aperture 16 and the corresponding aperture in the container roof. Thus, if the rod 14 is pushed downwardly using the handgrip 34 to compact refuse in the container, the upward force on the plate 12 will force the end 38 of the rod 14 into the bracket 42 so that the plate 12 is then locked against rotation relative to the rod 14. However, after the refuse has been compacted, lifting the rod 14 removes the upward force on the plate 12 and allows the end 38 of the rod 14 to disengage from the bracket 42 so that the plate can once again rotate relative to the rod 14.

In order to store the compacting mechanism, the rod 14 is drawn upwardly until the end 38 is above the aperture 16 in the support member 10, Fig. 5. This draws the top ends of the arms 40 through the aperture 16 since the projections 18 remain engaged in the grooves 36 at their closed ends 36A, and hence the plate 12 is drawn up under the member 10.

Now, Fig. 6, the entire rod 14 is rotated about the projections 18 so that it lies in the channel 10A of

the support member 10, the channel 10A being open at one end 10B to allow this. Finally, Fig. 7, the handgrip 34 is pushed to collapse the two parts 14A, 14B and slide the entire collapsed rod 14 along its own axis fully into the channel 10A so that the end 38 of the part 14B comes to rest against the closed end 10C of the channel 10A. During the sliding of the part 14B along the channel 10A the projections 18, which are of course fixed longitudinally of the channel, slide along the grooves 36.

To bring the mechanism from the storage position to the operative position these actions are reversed, i.e. first the rod 14 is slid along its own axis along the channel 10A until the ends 36A of the channels 36 come to engage the projections 18 (Fig. 6), then the rod 14 is rotated upright over the aperture 16 (Fig. 5), and finally the rod is pushed downwardly through the aperture 16 (Fig. 1).

Figs. 8 and 9 show the compacting mechanism fitted to the non-opening roof 50 of a refuse container 52 of the kind used in fast-food establishments, the support member 10 being recessed into the roof 50 with its channel 10A extending transversely across the roof. The roof 50 has an aperture in register with the aperture 16 in the member 10 to allow the actuating rod 14 to pass through both apertures. The container has a side opening which is covered by an inwardly opening flap 54 which is hinged (not shown) along its top edge to the roof 50 to allow refuse to be placed into a bin (also not shown) in the container 52, the bin being

lined with a removable sack. The container 52 has an outwardly opening door 56 to allow a bin containing a full refuse sack to be removed and replaced with an empty one.

5

Fig. 8 shows the compacting mechanism in the storage position wherein the rod 14 lies along the channel 10A in the support member 10 and the plate 12 is drawn under the container roof 50, while Fig. 9 shows the mechanism in its operative position wherein the plate 12 is within the not-shown bin in the container 52. To avoid over-compaction, the resilient retaining means 28, 32 which cooperate to hold the two parts 14A, 14B of the actuating rod 14 in its fully extended position are overcome upon the compacting plate 12 meeting a given resistance in use so that the one part 14A retracts into the other 14B to substantially cease further compaction.

Alternatively, not shown, the two parts 14A, 14B can be releasably lockable in their extended position so that no such retraction under pressure occurs but rather they need to be manually released to effect retraction. If desired, a one piece non-extendible rod 14 can be used, particularly where a long reach is not required.

When the mechanism is in its operative position the plate 12 can be removed from the rod 14 for cleaning by tipping it sideways and sliding the projections 18 up the grooves 36, i.e. away from their lower ends 36A, to the gaps in the grooves next to the holes 30, Fig. 2.

30

Although the mechanism has been described in use with the type of refuse container used in "fast-food" establishments which have a side opening for the insertion of refuse, the invention can be used in any
5 situation, commercial or domestic, where a surface which can receive the support member 10 overlies a refuse container which can receive the plate 12, and the mechanism can be manufactured in various sizes to fit these various applications.

10

The invention is not limited to the embodiment described herein which may be modified or varied without departing from the scope of the invention.

Claims

1. A compacting mechanism for fitting to a surface over a refuse container, the compacting mechanism comprising a support member for fitting to the said surface, the support member having an aperture which in use is in register with an aperture in the said surface, a compacting plate mounted under the support member, an actuating rod, and means coupling the compacting plate to the actuating rod such that the rod may be manoeuvred from a storage position wherein the rod lies along the support member across the said surface and the plate is drawn up under the said surface to an operative position wherein the rod stands upright over the aperture in the support member and may be pushed downwardly through the registering apertures to push the plate down into the container.

2. A compacting mechanism as claimed in claim 1, wherein the compacting plate is slidably and pivotally coupled to the actuating rod such that in the storage position of the rod the plate is coupled to the rod at a point intermediate its ends, the rod being manoeuvrable to its operative position by sliding the rod along its own axis until the coupling means reaches one end of the rod and then rotating the rod upwardly about said one end.

3. A compacting mechanism as claimed in claim 2, wherein the support member comprises a channel member extending in use across the said surface, the aperture in the support member being formed in the base of the

channel and the actuating rod being located in and slidable along the channel.

4. A compacting mechanism as claimed in claim 2 or 3,
5 wherein the other end of the actuating rod has a handgrip.

5. A compacting mechanism as claimed in any one of
claims 1 to 4, wherein the actuating rod is adjustable
10 in length.

6. A compacting mechanism as claimed in claim 4,
wherein the actuating rod comprises at least two parts
which are slidable one relative to the other to adjust
15 the length of the rod.

7. A compacting mechanism as claimed in claim 6,
wherein the actuating rod includes resilient retaining
means for holding the two parts in an extended position
20 of the rod, said resilient retaining means being
overcome upon the compacting plate meeting a given
resistance in use so that the one part retracts into
the other to substantially cease further compaction.

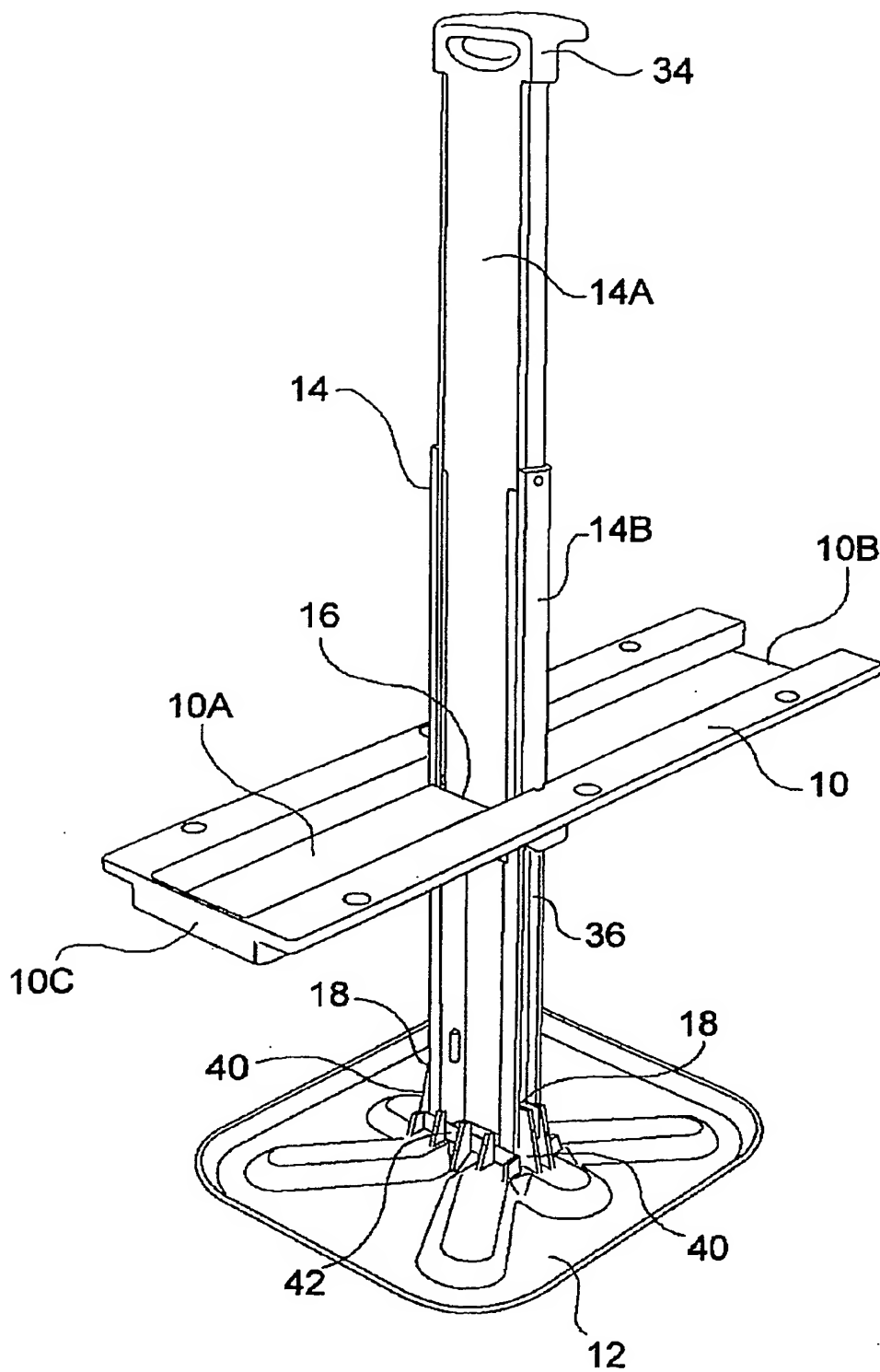


Fig. 1

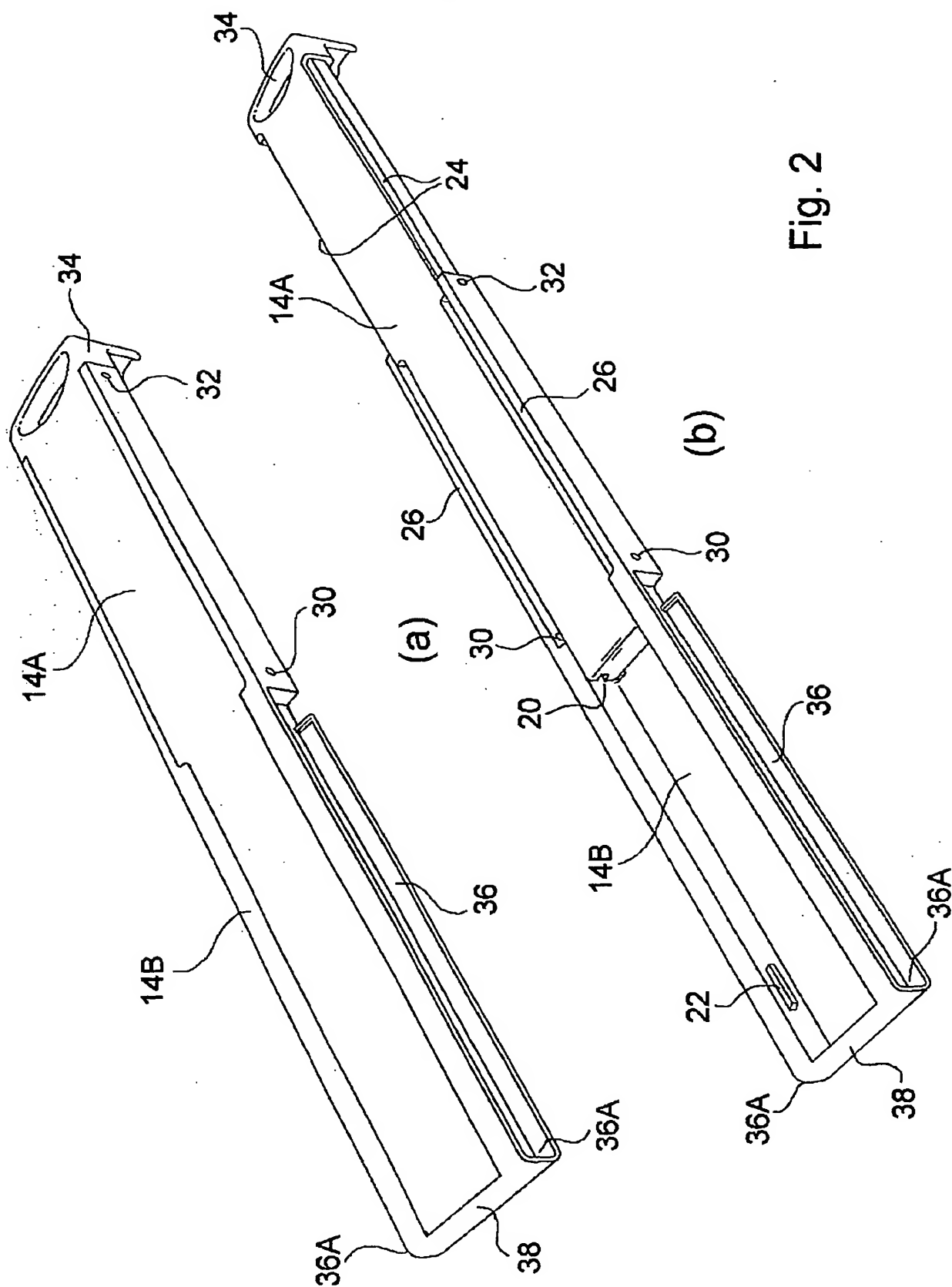


Fig. 2

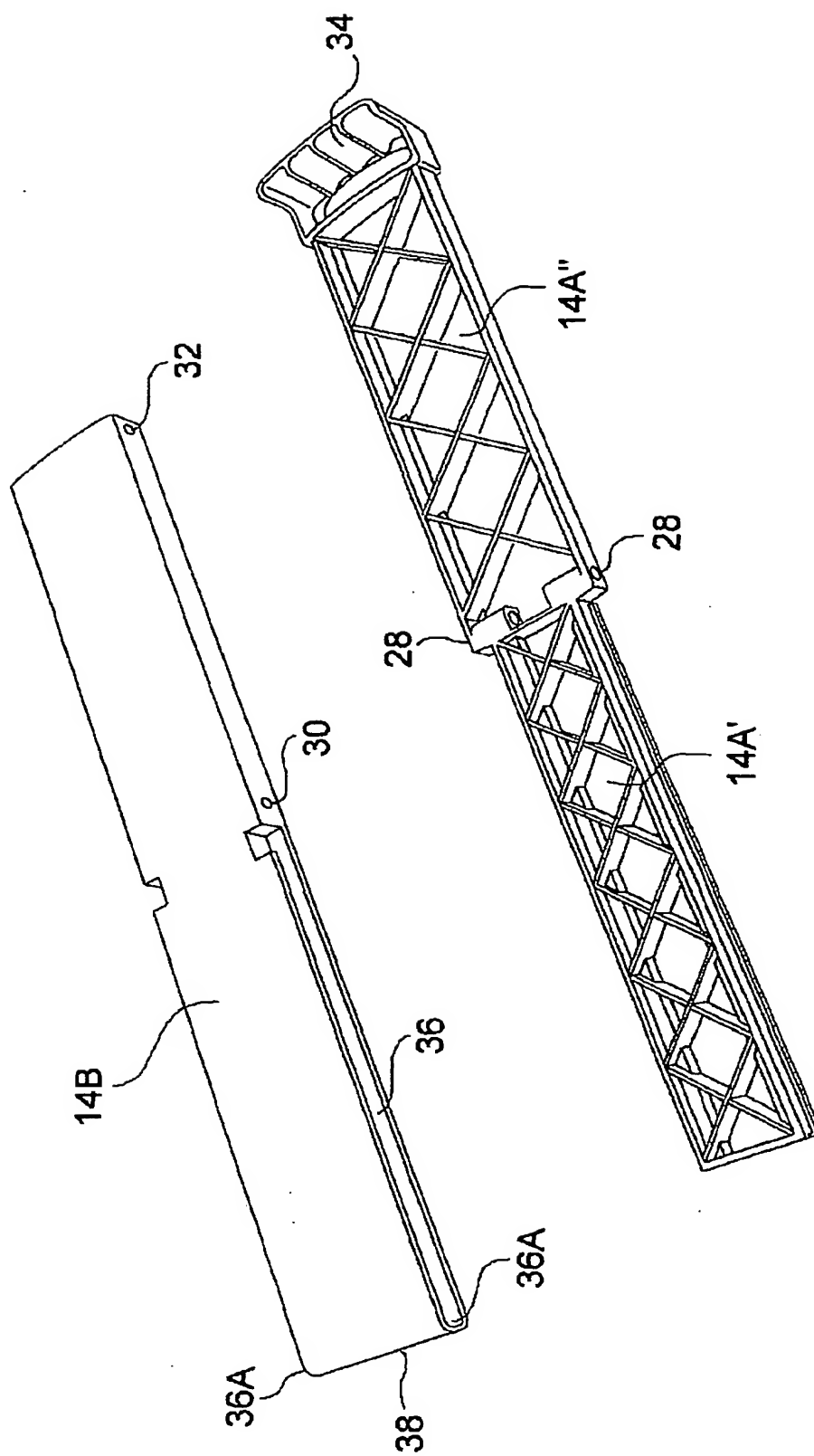


Fig. 3

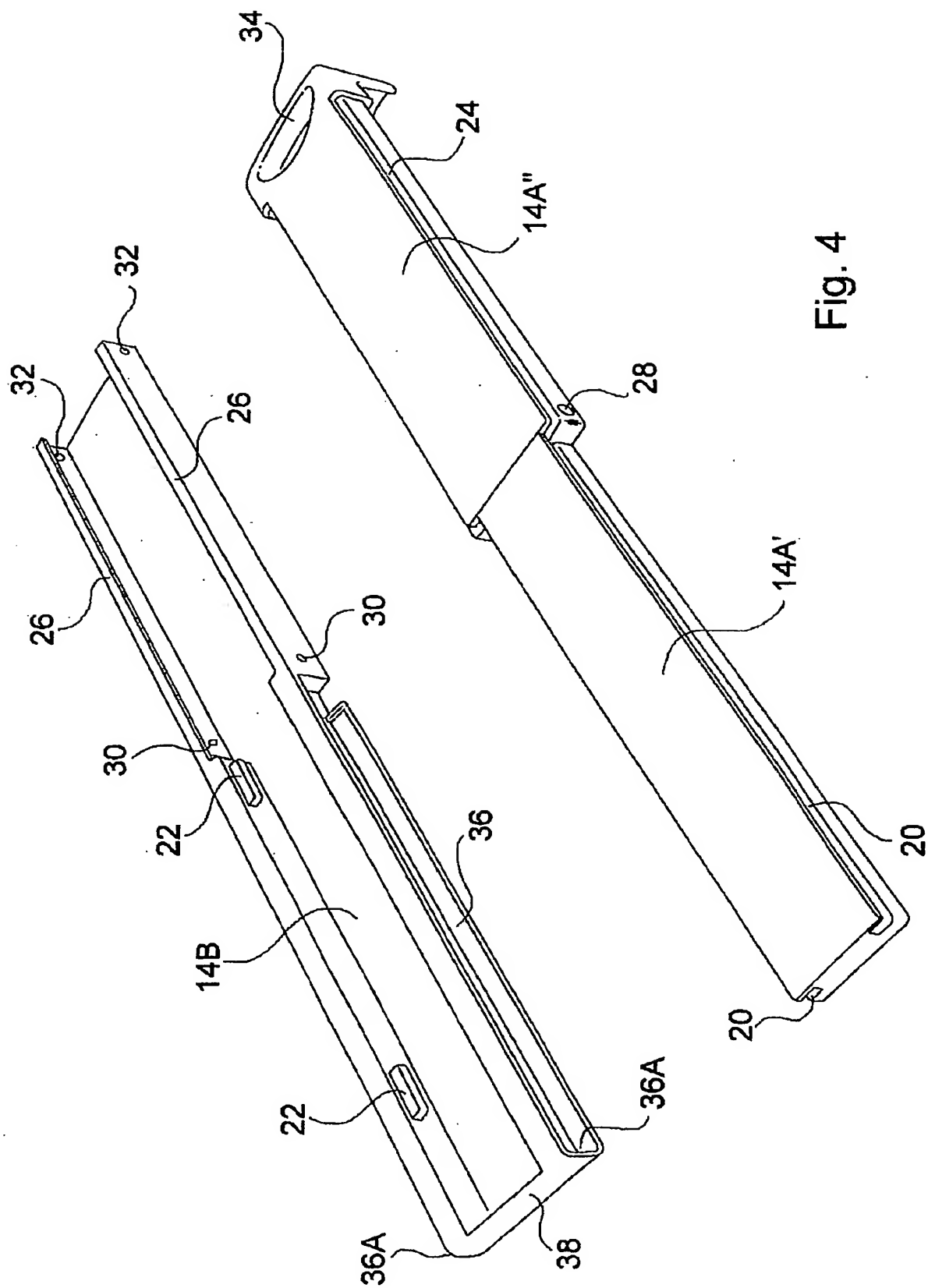


Fig. 4

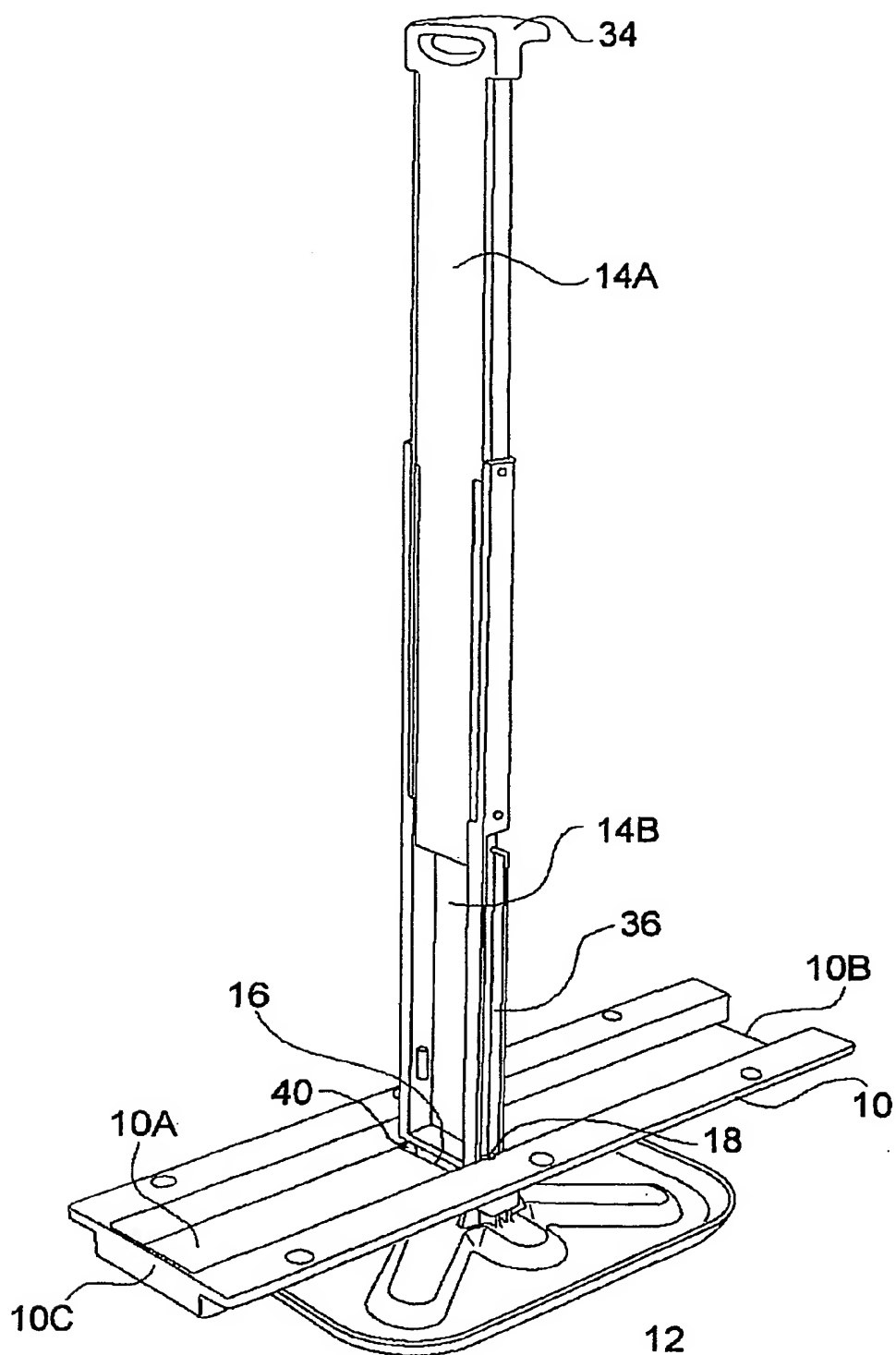


Fig. 5

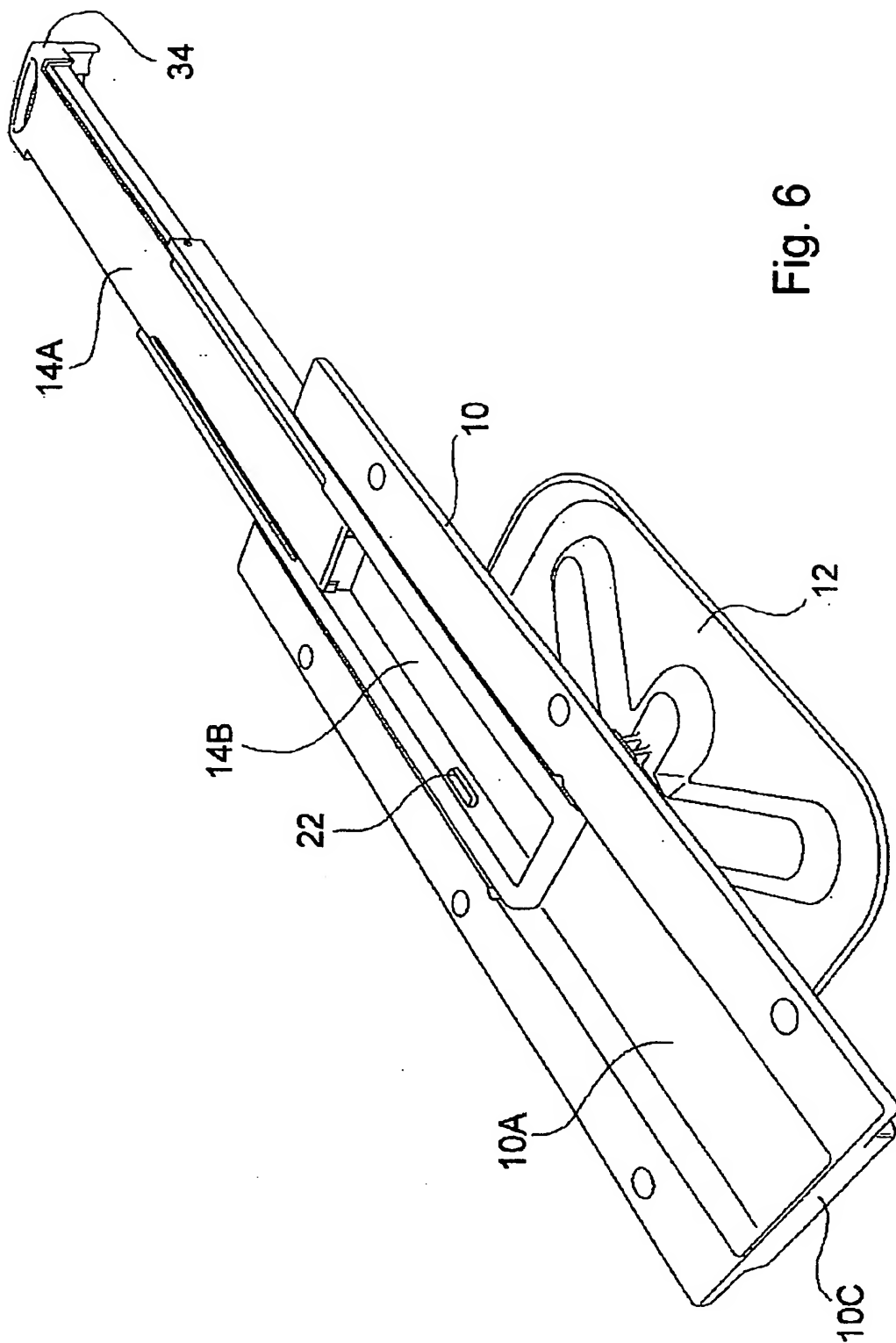


Fig. 6

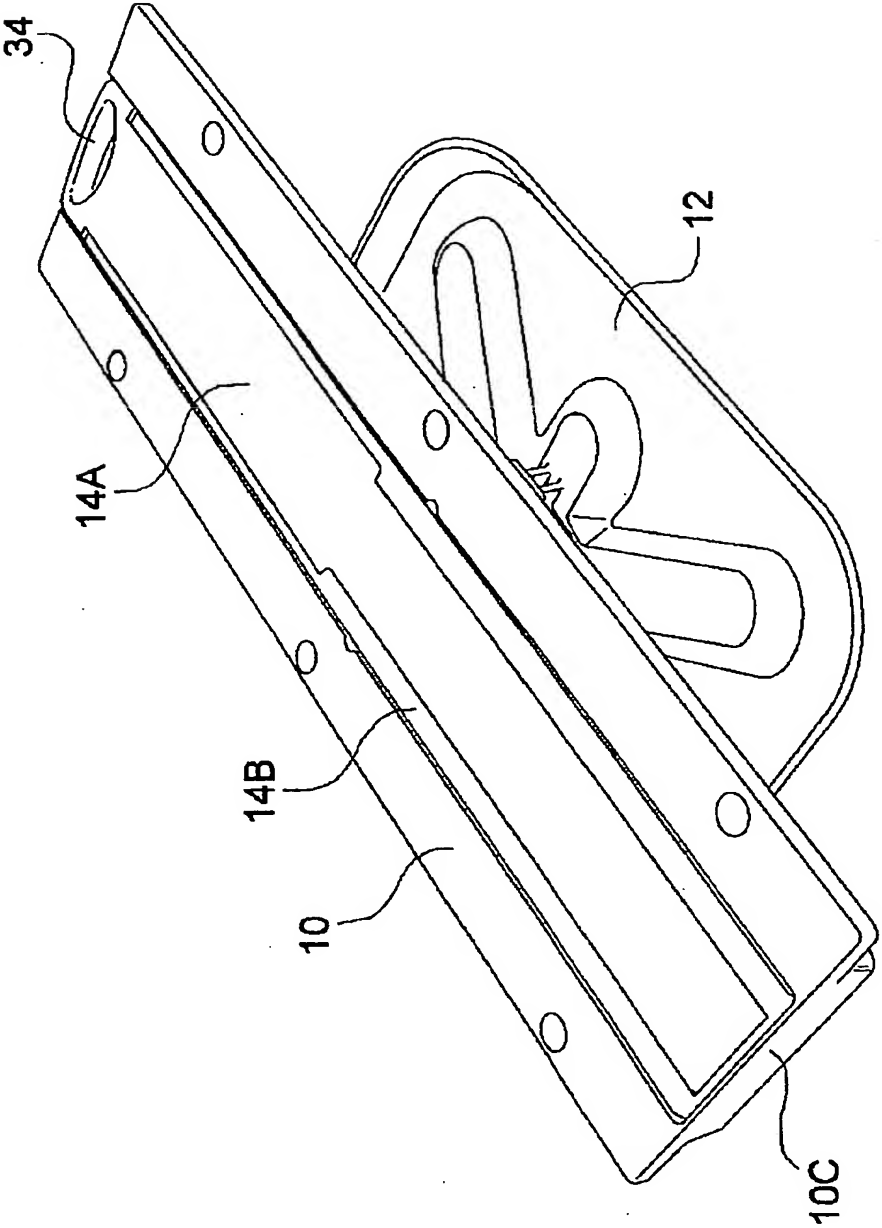


Fig. 7

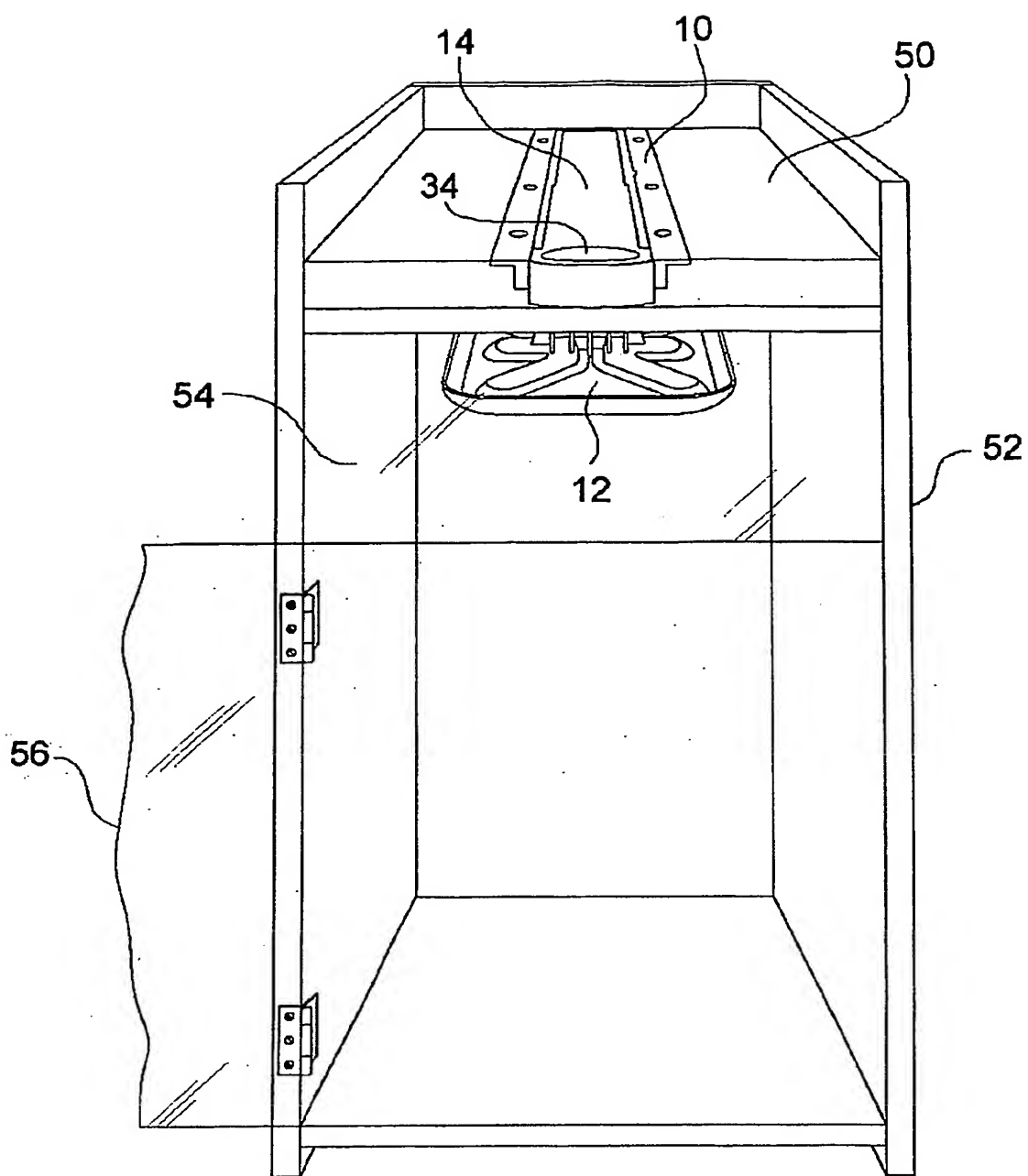


Fig. 8

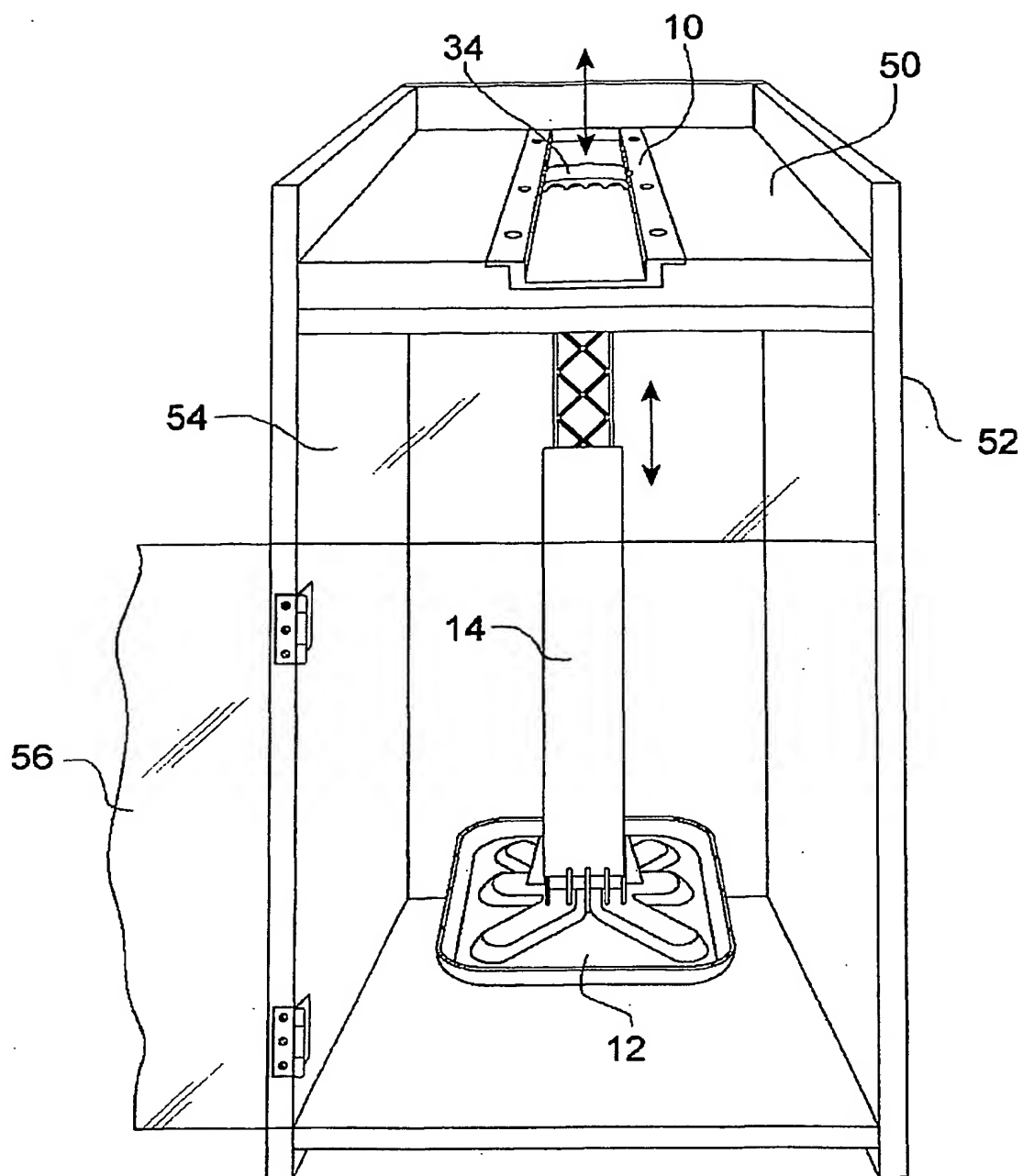


Fig. 9

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IE2004/000069

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B65F1/14 B30B9/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65F B30B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/46042 A (T. ERNST) 28 June 2001 (2001-06-28) cited in the application page 6, line 11 - page 7, line 19 figure 4	1-6
X	US 4 658 720 A (H. MASSONNET) 21 April 1987 (1987-04-21) column 2, line 20 - column 4, line 9 figures 1-7	1-4
X	US 5 090 309 A (F. LAI) 25 February 1992 (1992-02-25) column 2, line 16 - column 3, line 26 figures 1-4	1-4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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5 August 2004

Date of mailing of the international search report

12/08/2004

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IE2004/000069

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